

WHAT IS CLAIMED IS:

1. An artificial bone comprising a calcium phosphate-based ceramic porous body having a plurality of pores which are three-dimensionally distributed throughout an entire region of the porous body including a surface thereof and each has a diameter ranging from 0.01 μm to 2000 μm , and interconnecting portions which are formed between neighboring pores, interconnect a plurality of pores existing on a surface of the porous body, and each has a diameter of 100 μm or more.

2. The artificial bone according to claim 1, wherein the calcium phosphate-based ceramic is selected from the group consisting of β -tricalcium phosphate, apatite hydroxide, ceramics comprising β -tricalcium phosphate and apatite hydroxide, and crystallized glass.

3. The artificial bone according to claim 2, wherein the calcium phosphate-based ceramic is obtained using β -tricalcium phosphate powder which is synthesized by means of mechanochemical method.

4. The artificial bone according to claim 2, wherein the calcium phosphate-based ceramic is obtained using β -tricalcium phosphate powder which is synthesized by means of mechanochemical method, wherein the β -tricalcium phosphate powder is mixed with water, a deflocculant and a surfactant to form a slurry which

is subsequently dried and sintered to form the calcium phosphate-based ceramic.

5 5. The artificial bone according to claim 1, wherein at least one substance selected from the group consisting of BMP, FGF, TGF- β , PDGF, VEGF, IGF, HGF, PTH and estrogen is incorporated in the calcium phosphate-based ceramic porous body.

10 6. An artificial bone comprising a calcium phosphate-based ceramic porous body having a plurality of spherical or amoeba-like pores which are three-dimensionally distributed throughout an entire region of the porous body, are interconnected with each other, and each has a diameter ranging from 0.01 μm to 2000 μm , the porous body having a porous structure in
15 which a total volume "A" of pores which are interconnected with each other through an interconnecting portion having a diameter of 100 μm or more from a core portion to outer surface portion of the porous body is accounted for 5% or more based on an entire volume of
20 the porous body and the total volume "A" is accounted for 25% or more based on a total volume of the pores having a pore diameter of 10 μm or more in the porous body, or a porous structure in which a total volume of the pores interconnected with each other through an
25 interconnecting portion having a diameter of "B" μm or more from a core portion to outer surface portion of the porous body among the pores interconnected with

each other through an interconnecting portion having a diameter of 5 μm or more is defined as "C", and a maximum value of differential dC/dB is derived under a condition of: $B > 100 \mu\text{m}$.

5 7. The artificial bone according to claim 6, wherein the calcium phosphate-based ceramic is selected from the group consisting of β -tricalcium phosphate, apatite hydroxide, ceramics comprising β -tricalcium phosphate and apatite hydroxide, and crystallized glass.

10 8. The artificial bone according to claim 7, wherein the calcium phosphate-based ceramic is obtained using β -tricalcium phosphate powder which is synthesized by means of mechanochemical method.

15 9. The artificial bone according to claim 7, wherein the calcium phosphate-based ceramic is obtained using β -tricalcium phosphate powder which is synthesized by means of mechanochemical method, wherein the β -tricalcium phosphate powder is mixed with water, a deflocculant and a surfactant to form a slurry which is subsequently dried and sintered to form the calcium phosphate-based ceramic.

20 10. The artificial bone according to claim 6, wherein at least one substance selected from the group consisting of BMP, FGF, TGF- β , PDGF, VEGF, IGF, HGF, PTH and estrogen is incorporated in the calcium phosphate-based ceramic porous body.

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11. A tissue engineering carrier which is capable of tissue engineeringly incorporating living cells, and comprises a calcium phosphate-based ceramic porous body having a plurality of spherical or amoeba-like pores which are three-dimensionally distributed throughout an entire region of the porous body, are interconnected with each other, and each has a diameter ranging from 0.01 μm to 2000 μm , the porous body having a porous structure in which a total volume "A" of pores which are interconnected with each other through an interconnecting portion having a diameter of 100 μm or more from a core portion to outer surface portion of the porous body is accounted for 5% or more based on an entire volume of the porous body and the total volume "A" is accounted for 25% or more based on a total volume of the pores having a pore diameter of 10 μm or more in the porous body, or a porous structure in which a total volume of the pores interconnected with each other through an interconnecting portion having a diameter of "B" μm or more from a core portion to outer surface portion of the porous body among the pores interconnected with each other through an interconnecting portion having a diameter of 5 μm or more is defined as "C", and a maximum value of differential dC/dB is derived under a condition of: $B > 100 \mu\text{m}$.

12. The tissue engineering carrier according to claim 11, wherein the calcium phosphate-based ceramic

is selected from the group consisting of β -tricalcium phosphate, apatite hydroxide, ceramics comprising β -tricalcium phosphate and apatite hydroxide, and crystallized glass.

5 13. The tissue engineering carrier according to claim 12, wherein the calcium phosphate-based ceramic is obtained using β -tricalcium phosphate powder which is synthesized by means of mechanochemical method.

10 14. The tissue engineering carrier according to claim 12, wherein the calcium phosphate-based ceramic is obtained using β -tricalcium phosphate powder which is synthesized by means of mechanochemical method, wherein the β -tricalcium phosphate powder is mixed with water, a deflocculant and a surfactant to form a slurry
15 which is subsequently dried and sintered to form the calcium phosphate-based ceramic.

20 15. An artificial bone wherein at least one kind of cell selected from the group consisting of stem cell, marrow anaplostatic cell, osteoblast, precursor cell of osteoblast, osteoclast and precursor cell of osteoclast is incorporated in the tissue engineering carrier claimed in claim 11.